

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-14 (cancelled).

Claim 15 (currently amended): A method of removing carbon monoxide from a hydrogen-containing treatment-object gas containing hydrogen as its major component and carbon dioxide, the method comprising:

a first step of causing the treatment-object gas to contact a first metal catalyst comprising one or more kinds selected from the group consisting of Ru, Pt, Rh, and Pd and capable of methanating carbon monoxide at a temperature where methanation of carbon monoxide takes place by the first metal catalyst so that a portion of the carbon monoxide is removed through carbon monoxide methanation and where methanation of the carbon dioxide is restricted; and

a second step of causing the treatment-object gas from the first step together with an oxidizing agent to contact a second metal catalyst capable of oxidizing carbon monoxide so that a remaining portion of carbon monoxide is removed mainly through carbon monoxide oxidation,

wherein in the first step, a carbon monoxide concentration of the treatment-object gas is reduced to approximately 30% or lower of an original carbon monoxide concentration of the treatment-object gas charged into the first step.

Claim 16 (cancelled).

Claim 17 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein in the second step, the second metal

catalyst comprising one or more kinds selected from the group consisting of Ru, Pt, Rh and Pd is employed; and

in the second step, a catalyst reaction layer is maintained at a temperature where oxidation of carbon monoxide takes place by the second metal catalyst involving addition of an oxidizing agent.

Claim 18 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein a total amount of the oxidizing agent supplied at the second step is below about 3 chemical equivalents in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 19 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein a total amount of the oxidizing agent supplied at the second step is below the chemical equivalent in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 20 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claim 21 (cancelled).

Claim 22 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein in the second step, the second metal catalyst comprising one or more kinds selected from the group consisting of Ru, Pt, Rh and Pd is employed; and

in the second step, a catalyst reaction layer is maintained at a temperature where oxidation of carbon monoxide takes place by the second metal catalyst involving addition of an oxidizing agent.

Claim 23 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein a total amount of the oxidizing agent supplied at the second step is below about 3 chemical equivalents in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 24 (previously presented): The method of removing carbon monoxide, according to claim 17, wherein a total amount of the oxidizing agent supplied at the second step is below about 3 chemical equivalents in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 25 (previously presented): The method of removing carbon monoxide, according to claim 22, wherein a total amount of the oxidizing agent supplied at the second step is below about 3 chemical equivalents in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 26 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein a total amount of the oxidizing agent supplied at the second step is below the chemical equivalent in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 27 (previously presented): The method of removing carbon monoxide, according to claim 17, wherein a total amount of the oxidizing agent supplied at the second step is below the chemical equivalent in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 28 (previously presented): The method of removing carbon monoxide, according to claim 22, wherein a total amount of the oxidizing agent supplied at the second step is below the chemical equivalent in oxygen conversion relative to an amount of carbon monoxide originally contained in the treatment-object gas introduced in the first step.

Claim 29 (previously presented): The method of removing carbon monoxide, according to claim 15, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claim 30 (previously presented): The method of removing carbon monoxide, according to claim 17, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claim 31 (previously presented): The method of removing carbon monoxide, according to claim 18, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claim 32 (previously presented): The method of removing carbon monoxide, according to claim 19, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claim 33 (previously presented): The method of removing carbon monoxide, according to claim 22, wherein said hydrogen-containing treatment-object gas comprises a reformed gas supplied to a fuel cell as a fuel gas.

Claims 34 –35 (cancelled).

Claim 36 (currently amended): A method of operating a fuel cell system, where carbon monoxide is removed from a hydrogen-containing treatment-

object gas containing hydrogen as its major component and carbon dioxide, comprising:

a first step of causing the treatment-object gas to contact a first metal catalyst comprising one or more kinds selected from the group consisting of Ru, Pt, Rh, and Pd and capable of methanating carbon monoxide at a temperature where methanation of carbon monoxide takes place by the first metal catalyst so that a portion of the carbon monoxide is removed through carbon monoxide methanation and methanation of the carbon dioxide is restricted;

a second step of causing the treatment-object gas from the first step together with an oxidizing agent to contact a second metal catalyst capable of oxidizing carbon monoxide so that a remaining portion of carbon monoxide is removed mainly through carbon monoxide oxidation; and

using methane produced at the first step as a reforming fuel,

wherein in the first step, a carbon monoxide concentration of the treatment-object gas is reduced to approximately 30% or lower of an original carbon monoxide concentration of the treatment-object gas charged into the first step.